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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,644	08/19/2003	Francois J. Henley	018419-000183US	5492

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EXAMINER	
LEE, HSIEN MING	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,644	HENLEY ET AL.	
	Examiner	Art Unit	
	Hsien-ming Lee	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *52 and 56-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *52 and 56-72* is/are rejected.

7)☒ Claim(s) *71* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

HSIEN-MING LEE
PRIMARY EXAMINER

1/10/06

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. Applicant's cancellation to claims 53-55 is acknowledged. Claims 52, 56-72 are pending in the application. All the objection and rejections, as set forth in the previous Office action, have been withdrawn.

Claim Objections

2. Claim 71 is objected to because of the following informalities: a typo-error. In line 2, the term "the overlying the film of material" should have been – the overlying film of material --. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 52 and 56-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruel et al. (US 5,863,830).

In re claim 52, Bruel et al teach a method for forming multilayered substrates, comprising:

- providing a donor substrate 2 comprising an overlying film of material 4 to be detached (Fig.1);
- coupling the overlying film of material 4 from the donor substrate 2 to a transfer substrate 12 (Fig.2);

- releasing the overlying film of material 4 from the donor substrate 2, while maintaining attachment to the transfer substrate 12 (Fig.3), the releasing comprising, providing a first energy (i.e. tensile 14 and shearing 16 forces) to a selected region 8 of the donor substrate 2 to initiate a controlled cleaving action; and providing a *mechanical grip force* (col. 2, lines 43-44) having a second energy to sustain the controlled cleaving action in order to free the overlying film 4 from the donor substrate 2 (from Fig.2 to Fig.3), i.e. by providing the mechanical grip force it would exert the tensile 14 and shearing 16 forces to free the overlying film 4 from the donor substrate 2;
- coupling the overlying film of material 4 on the transfer substrate 12 to a handle substrate 24 (col. 5, lines 52-54); and
- transferring the overlying film of material 4 from the transfer substrate 12 to the handle substrate 24 to free the overlying film of material 4 from the transfer substrate 12 while providing the overlying film of material 4 on the handle substrate 24 (Fig.4).

The foregoing mechanical grip force can be interpreted as the claimed "second energy."

Bruel et al do not expressly teach that the second energy (i.e. mechanical grip force) is lower than the first energy (i.e. tensile 14 and shearing 16 forces). However, it would have been obvious to one of the ordinary skill in the art, at the time the invention was made, to comprehend that the second energy has to be lower than the first energy since by doing it would maintain the integrity of a rear surface 8 of the overlying film of material 4, i.e. when the second energy is too high and higher than the first energy it would create rough detaching surface 8 after the releasing. The energy associated with the releasing is also related to a bonding energy at an

interface between films (col. 2, lines 30-48). In addition, the second energy can also be broadly interpreted as a *chemical energy associated with a chemical dissolving* (col. 5, lines 60-63) for releasing the overlying film of material 4 from the donor substrate 2 after applying the first energy of 14 and 16. The chemical energy is also lower than the first energy (i.e. the tensile and shearing forces).

In re claim 56, Bruel et al teach that the coupling is provided using adhesive (col. 5, line 52).

In re claims 57 and 59, Bruel et al teach that the transfer substrate 12 is made of a conductive material (i.e. aluminum, which is a metal, col. 5, lines 8-9).

In re claim 58, the selection of the material for the transfer substrate 12 is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species. In re Jones, 162 USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980)(discovery of optimum value of result effective variable in a known process is obvious). In particular, Bruel et al. teach that the transfer substrate can be glass or quartz (col. 1, lines 21-22).

In re claim 60, Bruel et al. teach that the transfer substrate 12 comprises a plastic material, i.e. polyvinyl chloride sheet coated with acrylic adhesive or epoxy resin adhesive (col. 5, lines 8-10).

In re claim 61, the selection of the material for the transfer substrate 12 is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species. In re Jones, 162 USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980)(discovery of optimum value of result effective variable in a known process is obvious).

For example, the selection of the plastic material for the transfer substrate involves a consideration in thermal expansion difference between the transfer substrate and the overlying film to avoid mechanical stresses (col. 1, lines 27-28).

In re claim 62, Bruel et al teach that the overlying film of material 4 has been formed using a controlled cleaving action (i.e. forming a gases microbubbles, col.2, lines 65-67, which would be subjected to the cleaving action using forces 14 and 16) before the coupling of the overlying film of material 4 on the transfer substrate 12.

In re claim 63, Bruel et al teach that the overlying film of material 4 on the donor substrate 2 has been detached via the tensile 14 and shearing 16 forces but not removed from the donor substrate 2.

In re claim 64, Bruel et al teach subjecting the overlying film of material 4 on the transfer substrate 12 to a first process (i.e. subjecting to a bonding process, col. 5, lines 8-11).

In re claim 65, Bruel et al teach subjecting the overlying film of material 4 on the transfer substrate 12 to a second process (i.e. subjecting to an electrical treatment by applying a high voltage to form a dielectric layer 22 at an interface between the overlying film 4 and the transfer substrate 12, Fig.3 and col. 5, lines 24-30).

In re claim 66, Bruel et al teach providing the first energy comprising providing energy from a mechanical source, such as the foregoing tensile 14 and shearing 16 forces (Fig.2).

In re claim 67, it would have been obvious to one of the ordinary skill in the art, at the time the invention was made, to comprehend that the first energy in Bruel et al. can be applied as time-varying or continuous, dependent upon the material characteristics of the transfer substrate 12 and the overlying film 4. One of the ordinary skill would have been motivated to optimize

the process by either continuously applying the first energy or time-varying applying the first energy in order to avoid cracking or fracture between the transfer substrate 12 and the overlying film 4.

In re claims 68-69, Bruel et al teach providing the second energy comprising providing a chemical energy, such as chemical dissolving (col. 5, lines 60-63), which is applied as flood.

In re claim 70, Bruel et al teach that the donor substrate 2 comprises a region 8 between the overlying film of material 4 and a portion of the donor substrate 2.

In re claim 71,Bruel et al. teach that the donor substrate 2 comprises a plurality of hydrogen particles between the overlying film of material 4 to be detached and a portion of the donor substrate 2 when the overlying film 4 is formed through a hydrogen implantation (col. 2, lines 62-65).

In re claim 72, Bruel et al. teach that the donor substrate 2 comprises a monocrystalline semiconductor material, which would inherently include silicon material (col. 4, lines 51-54).

Response to Arguments

5. Applicant's arguments with respect to Biasse reference have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (7:30 ~ 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-ming Lee
Primary Examiner
Art Unit 2823

Jan. 10, 2006

HSIEN-MING LEE
PRIMARY EXAMINER
1/10/06